

COMMONWEALTH OF MASSACHUSETTS

NORFOLK, SS.

SUPERIOR COURT DEPARTMENT
OF THE TRIAL COURT

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COMMONWEALTH OF MASSACHUSETTS,

v.

KAREN READ.

* * * * *

* Docket No. 2282CR00117

BEFORE THE HONORABLE BEVERLY CANNONE
FRIDAY, JUNE 14, 2024
TESTIMONY OF JESSICA HYDE

APPEARANCES:

For the Commonwealth:

BY: ADAM LALLY, A.D.A.
LAURA MCLAUGHLIN, A.D.A.

For the defendant:

BY: DAVID YANNETTI, ESQ.
ALAN JACKSON, ESQ.
ELIZABETH LITTLE, ESQ.

Dedham, Massachusetts
Room 25

Christine D. Blankenship, CVR
Court Reporter/Transcriber

**With Sidebar*

I N D E X

WITNESS:	DIRECT	CROSS	REDIRECT	RECROSS
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Jessica Hyde				
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(By Mr. Lally)	3			
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(By Mr. Yanetti)		50		
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1 (Court in session.)

2 (Defendant is present with counsel.)

3 (Jury in.)

4 (Testimony commences at 10:22 a.m.)

5 JESSICA HYDE, sworn

6 **DIRECT EXAMINATION**

7 **BY MR. LALLY:**

8 Q Ma'am, if you want, that microphone is adjustable. You
9 can put it pretty much anywhere you're comfortable with,
10 okay?

11 A Thank you.

12 Q Good morning.

13 A Good morning.

14 Q Could you please state your name and spell your last
15 name for the jury?

16 A Jessica Hyde, H-Y-D-E.

17 Q And what do you do for work, ma'am?

18 A I'm a digital forensics examiner. I own a digital
19 forensics firm that does training, services, and research.

20 Q And the digital forensics firm that you own, what's it
21 called?

22 A Hexordia, H-E-X-O-R-D-I-A.

23 Q And how long have you had your own firm?

24 A Three years.

25 Q Now, Ms. Hyde, if I could ask you to talk a little bit

1 about your educational background and your work history.
2 Starting with undergraduate, where did you go and what if
3 any degrees did you receive?

4 A My undergraduate degree is a bachelor of science in
5 electronics engineering technologies. I was on active duty
6 in the Marine Corps at the time, so I went to several
7 schools. My final graduation was from ECPI.

8 THE COURT: I want you to slow down your speech.

9 THE WITNESS: Oh, so sorry, ma'am. Sorry, Your Honor.

10 A So my final graduation was from ECPI College of
11 Technology. However, I attended several universities
12 because I was on active duty at the time.

13 Q And following your undergraduate, where did you go from
14 there?

15 A From there, I went and completed my tour on active
16 duty. I went into work in the field and eventually then
17 did my master's in computer forensics from George Mason
18 University.

19 Q And when about was it that you received your master's
20 in computer forensics from George Mason?

21 A I received my master's, I believe, 2014.

22 Q And as far as you mentioned that you had started
23 working a little bit post military, but before going to
24 grad school; is that right?

25 A Correct. I started working in digital forensics in

1 2010.

2 Q And where did you begin when you started working in
3 2010?

4 A I was a contractor for a company called American
5 Systems working at the terrorist explosive device
6 analytical center called TDAC.

7 Q And following, sort of going forward to when you
8 received your graduate degree, if you could speak a little
9 bit about your work history since then?

10 A Sure.

11 Q So I continued to work at TDAC while I had completed my
12 degree. That was doing digital forensic analysis on phones
13 that were connected to improvised explosive devices. So
14 most of the phones I received was post-blast, and I would
15 recover data from that and analyze that.

16 From there, once I had completed my degree, I went and
17 worked in the regular private sector. I worked for Ernst
18 and Young, now called EY. There, I was one of their mobile
19 forensics experts working a variety of cases, everything
20 from insider threat to insider trading. Then I really
21 missed doing more public service work, so I left to go to
22 the National Media Exploitation Center, which is a -- I
23 worked there as a contractor under a company called Basis
24 Technology. That organization supports 22 government
25 agencies in the intelligence community supporting the

1 things that are either the highest priority or the things
2 that other organizations can't support. So we were the
3 center of excellence for the US government in mobile
4 exploitation, and I ran that team there.

5 Q Now, and then --

6 A From -- from there. I can go from there. From there, I
7 went and became the director of forensics for Magnet
8 Forensics, which is a company that develops tools for
9 digital forensics. So there I was in a position where I did
10 a large amount of research into new artifacts, unsupported
11 access to devices, et cetera. I was there for five years
12 before starting my own firm.

13 Q And then, what did you -- no, I'm sorry. Let me start
14 again.

15 As far as what, if any, teaching experience do you have
16 in relation to this field?

17 A That is an excellent question. I've actually been an
18 adjunct professor at George Mason University since 2016.
19 I've taught 20 terms in their graduate program. I teach the
20 mobile forensic analysis course in their digital forensics
21 master's program.

22 Q In addition to your work and your teaching and all your
23 training, are there any professional organizations related
24 to your field that you're a member of?

25 A Actually several. I am a member of the Organizational

1 Scientific Area Committee on Digital Evidence, which is a
2 part of NIST, the National Institute of Science Technology.
3 I am a member of the Scientific Working Group on Digital
4 Evidence, also called SWIGD-E. I am the chair of a project
5 called DFIR Review. That does peer review of academic work
6 that's done by practitioners in the form of blogs. I've
7 been chairing that project since 2018 when it started with
8 our first publications in 2019. I am the first VP at the
9 international executive committee level of the High Tech
10 Crime Investigation Association, also called HTCIA, which
11 I've been a member of since 2012, and I will ascend to --
12 I've been elected. I'll ascend to president next September.

13 I am also -- see, I do a lot of volunteer work. I also
14 am an associate member of the American Academy of Forensic
15 Sciences, AAFS. And I just recently finished my term as an
16 associate editor for Forensic Science International Digital
17 Investigation, which is a peer reviewed journal in the
18 academic space of digital forensics, and I'm still a
19 reviewer, but I stepped down from my duties as an associate
20 editor.

21 Q Bringing me to my next question, what if any sort of
22 articles or publications have you published in relation to
23 your field?

24 A That's a great question. I've published a paper on the
25 standardization of data recovery. I worked on that with Dr.

1 Owen Casey and Dr. Nelson. That was published in "Forensic
2 Science International digital Investigations Journal." I
3 also was the second author on a paper related to the use of
4 AI in digital forensics, artificial intelligence. And I
5 published numerous articles, blogs, white papers. I
6 probably have published about 20 of those, but just
7 speaking to the peer review work, too.

8 Q When you say peer review, can you explain to the jury a
9 little bit about what that means or what that process
10 entails?

11 A Absolutely. So a peer reviewed work is when you have a
12 novel piece of research that you then submit that novel,
13 never been presented work to a journal. It then gets
14 reviewed by numerous academic peers. It goes through cycles
15 of revision where they ask more questions. On the
16 Standardization of File Recovery paper, that process took
17 about 14 months for it to be peer reviewed by experts in
18 the field, and then it is published in a journal.

19 Q So you've had both articles that you've authored that
20 have been peer reviewed and published, as well as you
21 perform the role of reviewer of other people's work.

22 A Correct. I perform the in addition to the publications
23 I've done, I reviewed at least 20 to 30 articles, both in a
24 combination of support for "Forensic Science International
25 Digital Investigations Journal" and DFIR review.

1 Q Now, if you could explain to the jury, when you say the
2 term as far as digital forensics, what do you understand
3 that term to mean with relation to what you do?

4 A I would describe digital forensics as the analysis of
5 data from any storage medium that can control data, be that
6 a mobile phone, computer or cloud, for the intention of
7 that data intentionally being used for court.

8 Q And with reference to your firm Hexordia, where is that
9 located? What state?

10 A We are headquartered in New York State in Bridgeport,
11 New York which is outside of Syracuse. We also have an
12 office location in the DC metro area in Tyson's Corner. But
13 we have -- we have employees in six states.

14 Q And with respect to your duties and responsibilities in
15 regards to your firm, what is it that you do?

16 A Great question. So I do perform digital forensic
17 analysis on cases. I currently work on two US government
18 contracts supporting one digital forensic analysis and two
19 novel research and exploitation of mobile devices. So I'm
20 named personnel on two contracts, and then I manage another
21 three. I also developed training for mobile forensics. My
22 courses have been taken by people all over the country, and
23 Hexordia also delivers that training. I also do research
24 and presentations for journals, conferences, et cetera. So
25 a combination of casework, education, and research.

1 Q Now, Ms. Hyde, if I could turn your attention to May of
2 2023. At some point during that month, were you contacted
3 by the Northeast District Attorney's Office in relation to
4 this case?

5 A Yes, on May 4, I was contacted by Detective Kelly via
6 our website about this case.

7 Q And eventually, was there a contract that was executed
8 and you agreed to do some work in relation to one -- one
9 specific area of this case?

10 A Yes. A contract was executed on May 9, and work began
11 on May 10th of 2023.

12 Q And as far as the specific information in relation to
13 this case, what was it that that you looked at?

14 A The --

15 Q I'm sorry. Let me start with this. What was it that
16 you were asked to look for?

17 A I was asked to look at two specific Google search terms
18 that took place on January 29.

19 Q And with regards to the information that was provided,
20 and we'll get to that in a moment, but with respect to the
21 question that was asked, was it a question that was posed,
22 or were you asked to find some sort of specific response?

23 A I was asked to look at the timelines and time stamps
24 related to those Google searches.

25 Q Now, with regard to what, if anything, was then

1 provided to you, or what, if anything, did you review in
2 the course of your analysis?

3 A I received two reports. I received the affidavit from
4 Richard Green, and I received the report from Trooper -- I
5 don't want to butcher his name, but something along the
6 lines of Nicholas Guarino.

7 Q Perfect.

8 A Oh, good.

9 Q And is it understanding that Mr. Green was a person
10 that was retained by the defense in this case?

11 A Yes, I was aware of that.

12 Q So you essentially you received reports from the
13 trooper from the state police and a witness for the
14 defense, correct? A That is correct.

15 Q In addition to those two reports, what, if anything
16 else, did you receive in relation to your analysis?

17 A On May 10, I received via US postal mail a copy of the
18 drive with data from a phone that was identified to me as
19 belonging to Jennifer McCabe. It was a full file system
20 extraction from a GrayKey.

21 Q And so when you received that information, what, if
22 anything, did you do?

23 A The first thing I did with that data set after having
24 been retained was I made a forensic copy. I use an ArcPoint
25 ATRIO to copy the data from that original disk, which was

1 then placed in our safe to a working copy drive.

2 Q And that ArcPoint ATRIO, what is that?

3 A It's a forensics tool that does extraction and
4 duplication.

5 Q And then once that process was completed, what did you
6 do from there?

7 A I immediately verified the hash value of my new image
8 to make sure that it matched the hash value of the original
9 image.

10 Q And what is a hash value?

11 A A hash value is an algorithmic numerical representation
12 of the data. So when you have a hash value, that value is
13 unique to a certain set of data. So when you have that same
14 hash value matching, you're ensuring that your copy that
15 you made was correct and not in any way damaged or corrupt.

16 Q And as far as matching those hash values, were you able
17 to do -- do so?

18 A Yes, the hash values of both the copy I made to work
19 from and the original match. They also match the document
20 that came along with the drive stating the original hash
21 value.

22 Q And then what did you do from there?

23 A From there, I processed the image in several forensics
24 tools. I used Cellebrite Physical Analyzer. I used Magnet
25 Axiom. I used a tool called Artex, A-R-T-E-X. I utilized a

1 tool called iLeap, and I later used a tool called Sanderson
2 Forensics SQLite, but I did not use that tool at this
3 point.

4 Q Now with reference to the tools that you used that you
5 just went through, are those fairly common tools? Are those
6 tools that are commonly used within your industry?

7 A Yes, they are commonly used digital forensics tools
8 that are very standard for other forensics examiners to use
9 on mobile exploitation.

10 Q And as far as those different types of tools, is that
11 -- so I guess my question is, there were a variety of
12 different tools that you used?

13 A Correct.

14 Q And why were you using the different tools?

15 A So different forensics tools have different
16 capabilities and look at data a little bit differently.
17 Phones have thousands of applications. If you look at the
18 Apple Store or the Google Play store, you can download a
19 total of six million apps between the two. Commercial
20 forensics tools, they can only support so many
21 applications, so they each work and support different bits
22 of data. So it's important to use multiple tools so you can
23 see the results from different table -- different data sets
24 and be able to compare those results and enhance those with
25 manual analysis.

1 Q And with respect to using those sort of different
2 variety of tools from Cellebrite to Axioms to Artex, et
3 cetera, is that something that you typically do as far as
4 your normal process of documenting a forensic analysis?

5 A Yeah, that's very, very typical for me to process with
6 multiple tools to ensure that I'm getting the most complete
7 interpretations from forensics tools. Of course, you go
8 beyond that with your analysis, but it's absolutely
9 pertinent to do that. I would run some of those tools
10 before others, because of speed and so I can begin analysis
11 while other tools are running.

12 Q If I could ask you just this about the last one that
13 you mentioned just briefly as far as the Sanderson Tool.

14 A Yes.

15 Q Can you explain to the jury, sort of what that is and
16 how that interplays with the other tools and analysis?

17 A The Sanderson Tool is meant to look at a specific type
18 of data structure called the SQLite database. SQLite
19 databases are very nuanced, and this particular tool allows
20 you to take that database and explore it at a deeper level
21 than the other forensics tools allow.

22 Q And just for the record when you use that term as far
23 as the SQLite database, how is that spelled?

24 A It is capital S-Q-L lowercase I-T-E. and SQLite is also
25 commonly pronounced as SQLite, so both pronunciations are

1 acceptable.

2 Q Now, once you received the extraction, made a copy and
3 then ran it through of those variety of tools, what is it
4 that you specifically were looking at and what is it that
5 you were trying to ascertain, or the question that you were
6 trying to answer?

7 A So in looking at that analysis, I was focused
8 specifically on the data that took place on January 29. So
9 the first thing I did was I limited my search within those
10 tools to that period, and I looked at the artifacts that
11 they were parsing pertaining to Safari history, as Safari
12 was the browser that had been used at that time.

13 Q Now in addition to looking at those search, what if any
14 information were you looking at in relation to deletions?

15 A I'm sorry, I could not hear you.

16 Q In addition to looking at those materials as far as
17 those searches were concerned, what, if anything else, were
18 you looking at regarding that data with respect to
19 deletion?

20 A I didn't hear the last word. With respect to?

21 Q Deletion.

22 A Deletion, I apologize. Thank you.

23 Q My fault. My fault.

24 A Yeah. So one of the things that was asked was -- one of
25 the things that was actually in the affidavit from Richard

1 Green was that it was stated that there was belief that one
2 of the search terms had been deleted. So I was specifically
3 looking at that search term to see if what the reason was
4 for the suspicion of deletion. There is -- the tools denote
5 things based on how they are running as an automatic
6 process. So tools are designed to parse through large
7 amounts of data to make it easier. So the tools will often
8 flag certain data as recovered, and sometimes there is
9 confusion between what recovery and deletion means. That
10 actually was the subject of the paper I referenced earlier
11 that I co-authored. And the tools are sometimes
12 misinterpreted that that statement of recovery means
13 deletion. So I was exploring that.

14 Q Now, you mentioned specifically there were two searches
15 of interest that you were exploring; is that correct?

16 A That is correct?

17 Q And what were those two searches and what, if any,
18 information did you have in relation to those?

19 A I had the information from the two reports that had
20 been written in terms of what they found and the two search
21 terms, one was hos, H-O-S, long tit to die in cold. And the
22 other one was, how long ti die in clkd.

23 Q And what if any information from your starting, if you
24 could, walk the jury through as far as your analysis, what
25 you first observed, and what your analysis consisted of as

1 it evolved?

2 A Absolutely. So when I first looked at it, some of the
3 tools surfaced the data from a specific storage called the
4 -- let me just make sure I get the entire path for you
5 com.apple.mobile.Safariplist. It is very common in mobile
6 devices for it to look like a reverse domain name. Like
7 you normally would go to a site like cnn.com. Typically,
8 those names are like the opposite. So com.apple is going to
9 be representative of a native Apple application. So this
10 particular P list was related to that. A P list is -- or
11 called a property list -- is a data structure that's unique
12 to Apple devices, and there is data pertaining to Google
13 search -- not Google -- well, not just Google searches --
14 search history that's stored there. There's also, I found
15 evidence of the search terms in knowledge CDB. The
16 knowledge C database is an Apple database that is meant to
17 store information about users so it can determine future
18 functionality, what you're looking for, et cetera. So
19 that's the knowledge CDB. It's more of a system level
20 artifact. And then there was also -- and these were the
21 observed search terms, and most of the tools picked up both
22 of those search terms in there. They're not all tools did
23 pick up the one that was from the wall which was the
24 instance of "Hos long to die in cold." That's how I'm
25 pronouncing the H-O-S. If you would like me to clarify it

1 a different way, that's fine. That particular search term
2 was recovered from a SQLite database, the one I later
3 explored. And Cellebrite, specifically demonstrated and
4 showed that particular search term as a suspended state
5 tab. And that's a really intricate artifact, whenever we're
6 ready to explore that. That is the one that was marked as
7 recovered. So those were my initial findings just looking
8 at what the automated tools parsed. However, Cellebrite
9 was the tool that found that particular search term.

10 Q Now, you used a term in there as far as a WAL or a
11 write ahead log file; is that correct?

12 A That is correct.

13 Q Can you please explain to the jury what your
14 understanding of that term is based on your training and
15 experience?

16 A Absolutely. This is a really interesting data
17 structure the way it works. So the way SQLite databases
18 work is the data before being committed to the database,
19 which is almost like an Excel spreadsheet if you think
20 about that. Each table is like a page on an Excel
21 spreadsheet. The data before going there goes kind of to
22 almost like a text file, like, if you were to have a DOC of
23 writing all the changes that need to happen to that Excel
24 spreadsheet. And they're not made to that spreadsheet
25 until it closes.

1 So what happens is as you're doing things - either
2 adding a website by searching for it or closing a tab or
3 deleting a text message in a SQLite database in general,
4 those things you add are written to that text document or
5 things you delete. So they all hang out there together.
6 So it's any changes that are going to be made since you
7 started using that application until it's closed, then they
8 change there, and then it reopens.

9 So to make an analogy, if you're in a restaurant and
10 you order some food, the food being the data, and you at
11 the table being the table that the data is going to, when
12 you request that data and you say, I'm adding it, it goes
13 to the area where the waiter or waitress, the server is
14 going to grab it from, right, that warming station. That
15 is almost like a write ahead log. And so different tables
16 are ordering food, and food is constantly being put there.

17 If somebody, maybe their steak came out rare and it
18 needs to be cooked more, when they send it back, it'll also
19 go to that warming area. So you can see there that you've
20 got things waiting to go out to the tables and things being
21 sent back to the kitchen. So simultaneously, that storage
22 area contains both the newest stuff waiting to go out and
23 the stuff coming back. And that's really what a WAL file
24 winds up containing - your newest Google searches, your
25 newest text messages, et cetera, as well as anything that

1 you've been deleted, that you've said was deleted because
2 the reference in there is going to be delete this entry.
3 And so then all of those don't happen until the application
4 is closed and reopened.

5 If the application's been closed, when we do the
6 extraction, we actually don't get the WAL file. We only get
7 the WAL file if at the time of extraction, that database
8 had not been closed. So that just means that Safari, in
9 this instance, was still running when the extraction was
10 done. Most of you when you use your phones, you leave the
11 applications up. So because of that, we have a WAL file,
12 and so that WAL file is going to contain both the data
13 that's been requested to be deleted and new data.

14 Now when I say deleted in this instance, I don't mean
15 like you as a user saying delete the full text message.
16 What I mean when I say deleted in this issue -- this
17 instance is removed from the database. So when we're
18 talking about something like a Safari tab, deletion from
19 the database can occur because you close the tab. We all
20 open tabs when we use our browsers on our phone, and we all
21 close them. And so closing in that instance would be a
22 deletion in the database. But what that's doing is not a
23 user requesting deletion. So I just want to be clear on
24 that term.

25 Q And to that point, as far as so when you say something

1 has been deleted specifically with reference to the write
2 ahead log or the WAL file, that's not something that's
3 necessarily initiated by the user; is that correct?

4 A Correct. And I think that's a common misconception,
5 yes.

6 MR. LALLY: Your Honor, just in regard to a side issue,
7 may we approach just briefly?

8 THE COURT: Sure.

9 (Sidebar commences.)

10 THE COURT: We are very hard at sidebars because we
11 need to do the white noise which makes it very difficult
12 for Madam Court Reporter to hear.

13 MR. LALLY: Understood.

14 THE COURT: So keep your voice up, Mr. Lally.

15 MR. LALLY: I will.

16 Your Honor, so what I was going to flag for the Court
17 is Ms. Hyde within her report has a couple of different
18 tables which I intended to use as chalks, but I just wanted
19 to get the Court's permission before I asked it for them to
20 be displayed on the screen.

21 THE COURT: Okay.

22 MR. YANETTI: I don't have a problem with that.

23 But while we're at sidebar, Your Honor, I'm sensitive
24 to Mr. Lally leading the witness. The last question was a
25 leading question. I'm not inclined to object after every

1 leading question and to prolong the process. I would just
2 ask that he refrain from leading.

3 THE COURT: Refrain from leading.

4 MR. YANETTI: Thank you.

5 MR. LALLY: Yes, Your Honor.

6 end of sidebar.)

7 Q Now, Ms. Hyde, you had used the term earlier in your
8 testimony regarding something within your field called an
9 artifact; is that correct?

10 A That's correct.

11 Q And can you explain to the jury what you understand
12 that term to mean?

13 A An artifact is any trace that's left behind by any
14 action on a digital piece of data.

15 Q And can you give the jury an example of sort of when an
16 artifact might be or an artifact might look like?

17 A Absolutely. So an artifact of you sending a text
18 message would be that we would find the database where text
19 messages are stored, and inside that database, we would see
20 the time and date that you sent it, who it received and who
21 it was sent to. It might not be their name. It might be a
22 numerical representation that we have to tie to another
23 database. Then we would have the message itself. It may be
24 in plain text, or it may be encrypted or encoded. And then
25 we may have something called a blob, and that would be a

1 reference to data that's too large to store in the
2 database, so it would be elsewhere. So that would be if
3 your text message included, let's say, a picture or a
4 video.

5 Q Now, in regard to your analysis and your ultimate
6 conclusions in this case, you wrote a report; is that
7 correct?

8 A That is correct.

9 Q And within that report, there are a couple of tables
10 and a specific figure; is that correct?

11 A That is correct.

12 MR. LALLY: Your Honor, with the Court's permission, if
13 I could, I'd like to publish to the jury table one from Ms.
14 Hyde's report.

15 THE COURT: Okay.

16 Q Ms. Hyde, do you have a copy of your report with you as
17 well?

18 A I do.

19 MR. LALLY: Your Honor, with the Court's permission,
20 just because I'm here and it may be a little difficult to
21 see from where she's seated, if she could refer to the
22 table and --

23 THE COURT: Sure.

24 THE WITNESS: Thank you.

25 Q Ms. Hyde, what's up on the screen, and I'm sorry, there

1 should be a laser pointer on the desk before you. Do you
2 see that?

3 A I do. Let me -- oh, yes.

4 Q So using that laser pointer, if you could, call the
5 jury's attention or direct the jury's attention, I should
6 say, with respect to what are we looking at in this
7 specific case?

8 A Absolutely. So this table here has a couple of
9 different elements that I'm showing in terms of what
10 searches were searched, where, when, and what source of
11 data they came from. So if we look at this first search, I
12 have them in the time stamp order that is associated with
13 the artifact. I want to clarify that we need to discuss the
14 meanings of these time stamps as we go. So this first one
15 that you're going to see is - and I'm just going to
16 reference my paper because of the size - is 2:27, 02:27 and
17 40 a.m. So that's two o'clock in the morning, twenty-seven
18 minutes and forty seconds. And it is a search for the
19 term: "-H-O-S long to die in cold," and that is time
20 stamped, in this instance, is from the browser state DB,
21 which is right here. The browser state DB is an artifact
22 that speaks to when tabs are moved. So when you're using
23 your browser and you open different tabs, you may have a
24 search that this time pertains to the time that that tab
25 moved. It could be lots of things. It could be you switch

1 tabs. It could be you close the tab. It could be you
2 minimize the application, depending on the version of iOS,
3 what can be that browser state of the tab that changes the
4 time stamp differs.

5 But what's very special to know about this time stamp
6 is that that is not the time necessarily of this search. If
7 a browser is opened and a single search is made, those will
8 match. However, as long as that browser hasn't been closed,
9 moved to the background, et cetera, if that browser has had
10 any activity that happens to that tab in terms of
11 application, closing, minimizing, this can update. That is
12 what that time stamp is for. This search term is always
13 going to be the most recent search term in that tab. That
14 means the last item that was opened in that tab was H-O-S
15 long T-I in cold. We cannot tell by this particular
16 artifact what time that search occurred. It is a high
17 likelihood that that tab was opened at this time because
18 there was another search that occurred at 2:27 in the
19 morning. It was a sports site. I cannot pronounce it. It
20 began with an H. Honk -- hock --

21 Q Hockomock?

22 A Hockomock. Okay. Thank you very much for the
23 pronunciation. Hockomock Sports. There were a couple of
24 searches pertaining to that done immediately after, but it
25 appears that that's when this tab was opened and the first

1 search done there. So this search, we know was done by
2 this, and we know that it was the last search in the tab
3 because it comes from this source, the browser state DB,
4 and that means that particular time stamp and search
5 pertains to what has happened with the tab. And that's what
6 allows you to open your Safari browser on your iPhone and
7 then open it on your iPad or your Mac and have the same
8 tab. That's the function there.

9 This search here. This is really interesting. So at
10 6:22:49 a.m., we have an entry in cache DB that is
11 specifically if we dig into this URL, this is an Apple
12 suggested term. So when you use a browser and you start to
13 type a search you've never typed before, the browser tries
14 to help you and say, "Are you searching for this?" So as
15 the user began to type the phrase in the immediate search
16 after which is, "How long T-I to die in C-K-L-D," this
17 particular suggestion came up, indicating, in all
18 likeliness, that the search term being typed had not
19 previously been searched because Apple suggested, instead
20 of a previous search, it suggested, how long does it take
21 to digest food. After how long to digest food had been
22 suggested, the user then has a search at that -- at that
23 time 6:23:51 for, "How long T-I die in cold," and that is
24 coming from the mobile Safari P list,
25 com.apple.mobileSafari P list I mentioned earlier, and the

1 search is also shown in the knowledge CDB. That's commonly
2 what we would expect. We would expect that search to be in
3 both of those -- both that P list and that database.

4 Then the --

5 Q All right. Can I stop you there?

6 A Yeah, absolutely.

7 Q As far as the expectation of that being in both of
8 those, the P list and the other database, why is that?

9 A That is because the search is not being tracked, not
10 only by the P list for Safari, but also by the system
11 itself to be able to do that predictive coding. So in the
12 future, when you start to type how long it gives you what
13 you searched last time.

14 Q And with respect to that, how long it takes to digest
15 food, based on your analysis, was that a search term that
16 was ever entered into this phone?

17 A Correct. The source of that, if you look at the first
18 in line where it says CDN2smooth.apple.com(ph), that's what
19 indicates that this is an Apple suggested term, not a user
20 input term.

21 Q I'm sorry. I interrupted you. If you could please
22 continue with that.

23 A Absolutely. The next search that was done immediately
24 after the search at 6:23, the next search was "how long T-I
25 die in C-L-K-D," Again, we see that search both in the

1 knowledge CDB and the mobile Safari P list. And then we
2 have, yeah, so we see it in both databases. Then -- so
3 that's how long to die in cold. Sorry, I moved onto the
4 next line.

5 Then at 6:24, we get the next search, which is, "-H-O-S
6 long to die in cold." And we have that search again both in
7 the knowledge CDB and the P list.

8 If I were time lining this based on activity, as
9 opposed to time stamps associated, what I see here is the
10 beginning of a user typing a search, Apple making a
11 suggestion of how long to digest food. The user does not
12 take that suggestion and rather inputs "how long T-I die in
13 C-K-L-D." They then make a second search of "hos long to
14 die in cold." that search winds up being the last search in
15 the tab, and that is why we see it in the -- this
16 particular browser state DB. It should be noted that this
17 is in one of those WAL files and not the raw file.

18 Q And so as far as sort of toward the top there, I know
19 we'll get a little more to this in a moment, but as far as
20 that reading at 2:27:40 in the morning as far as the time
21 stamp associated with the search, why would that time stamp
22 be associated with it if it's search later on in the
23 morning?

24 A Because that table isn't showing the time of that
25 search. It's showing the state of the database. So it's

1 saying that the last time that tab was touched, moved to
2 the background or foreground, was 2:27 a.m. The website, as
3 you search more websites in the tab, that gets updated. So
4 the current state that this is showing is that it was --
5 the tab was moved to the background or opened or some
6 action for the tab at 2:27 a.m. when the Hockomock Sports
7 -- I got it right. Hockomock Sports website was visited,
8 and then once the Hockomock Sports website was visited,
9 that tab was in continual use. There were other searches
10 and activities that happens. We don't see that happens.
11 Eventually, this search gets made at 6:23 a.m., this search
12 at 6:24 a.m. That winds up being the last search in the
13 tab, and because it's the last search in the tab, that's
14 what the final update is and the final status.

15 Q So when you say last search in the tab in reference to
16 time in reference to what time, specifically?

17 A I'm sorry. I don't understand the question.

18 Q Bad question. Let me rephrase. So as far as the 27 tab
19 is closed, and then another search done at 6:23; is that
20 correct?

21 A Two twenty-seven isn't necessarily one time when the
22 tab was closed. That's -- in my report, I say that it's
23 undetermined because there's a lot of things that can cause
24 that time stamp to be there, including tab being moved, tab
25 being minimized. I don't know exactly what caused the tab

1 to get that particular entry, but it is not -- that time
2 stamp is not indicative of the time of the search or any
3 URL that's visited there. That time is indicative of
4 movement of the tab and the search is the most recent
5 search. So they update at different times.

6 Q So I guess my question is, as far as how much your
7 analysis is here, is there any use of that tab between --
8 or is there any evidence or artifact of use of that tab
9 between the 2:27 timestamp and the 6:23 time stamp.

10 A So the fact that the time -- that that time stamp
11 exists at 2:27 combined with the fact that the only
12 existence of this search is at 6:24 means that, yes, that
13 time that -- that particular tab was used after 2:27 when
14 the Hockomock Sports was searched. I apologize for not
15 being familiar with that name.

16 Q That's absolutely fine. Now, if I could ask you at this
17 point if you would talk about one in particular database
18 having sort of an intricate artifact.

19 A Mm-hmm.

20 Q If you could remind the jury what that is, and if you
21 could explain that.

22 A So the artifact that needed a little bit more
23 explanation and digging was this browser state tab, and
24 that's because if you look at the end of a file name,
25 you'll see it's a DB dash WAL. That means it wasn't in the

1 regular database. It was in the write ahead log. And to
2 Cellebrite's credit, they -- that tool actually parsed the
3 write ahead log and displayed it where the other tools did
4 not.

5 If you remember before we talked about write ahead
6 logs, and we talked about the fact that they can contain
7 data that is both removed from a database and data that's
8 not yet to be committed. And this database, we cannot -- we
9 do not know which that is. But what I did was I manually
10 went through, and that's in the figure, I manually went
11 through and reconstructed the WAL files using the Sanderson
12 SQLite tool. And in reconstructing the WAL files, I found
13 many -- I'll tell you exactly how many if I can refer to my
14 notes --

15 THE COURT: Sure.

16 THE WITNESS: Can I refer to my notes?

17 A Approximately 16 instances of that existing in the WAL
18 file. Now, what's interesting in that figure is that the --
19 each entry of something in a write ahead log gets a unique
20 identifier. So it gets a -- it gets a number, right, that
21 makes it unique. Just like each one of us has a phone
22 number that's unique to us, each entry in the database that
23 starts in the write ahead log gets its own unique
24 identifier. And that unique identifier in this instance in
25 all 16 entries in the WAL file is the same, which shows

1 that it's truly only one search, not multiple searches for
2 that search term in terms of what exists in the WAL file.
3 So that's -- that's the first piece of nuance there that it
4 only truly was searched one. And you would -- you would
5 have to really dig into that WAL file to expose that, but I
6 think it was pertinent to know how many times this was
7 searched.

8 Q I'm sorry.

9 A Yes, please.

10 Q Let me stop you there for one moment.

11 MR. LALLY: And, Your Honor, with the Court's
12 permission, if I could ask Ms. Gilman to publish table two
13 now.

14 THE COURT: Okay.

15 A Oh, wonderful.

16 THE WITNESS: May I look at table two?

17 THE COURT: Sure.

18 THE WITNESS: Thank you, Your Honor.

19 Q And Ms. Hyde, do you recognize what's up on screen?

20 A I do. That is table two of my report on page four.

21 Q And if you could, again, using the laser pointer that
22 you have before you, direct the jurors' attention to what,
23 if anything, of significance is depicted in table two up on
24 the screen.

25 A So table two here is designed to share with us what

1 each of the locations that can potentially have Safari
2 data, what kind of data they hold. And one of the things
3 that many of us are interested in sometimes is do these
4 things hold our private searches, like, if we're in
5 Incognito mode in Google or private searching here. So
6 this table denotes if we're seeing private or nonprivate
7 searches, if it includes tabs that are open or closed, so
8 that we know which artifacts are giving us what kind of
9 information, as well as what some of the associated time
10 stamps mean. So this was designed as a guide to really
11 understand table one more in depth.

12 So this first one here. This refers to the history DB
13 WAL file, and that file has nonprivate searches. It
14 includes closed tabs and the visit time there is the time
15 that a user reopened the tab. We don't always have the
16 artifacts we want, and in this instance, we did not have
17 that particular one. Then we have the Safari tab CB. This
18 has private tabs and nonprivate tabs and it only -- it
19 shows only tabs that have not been closed. So this is an
20 active tabs database.

21 The next one we have is the browser state DB and its
22 WAL file. And this is the one we were referencing where
23 that -- that we keep talking about where that 2:27 a.m.
24 number is coming from. So this one is going to be
25 nonprivate searches. It includes closed tabs, which is

1 important, and the last viewed time, so when an item went
2 to the background. So it's about the tab, not about the
3 search. That's probably the most important demarcation.
4 And one of the issues here is when the tools parse the
5 data, they call the columns what the columns are called raw
6 in the data. Those don't necessarily tell us what they
7 mean. We have to verify and validate what they actually
8 mean. So when I'm saying last underscore view time, that's
9 what the database name is, not necessarily the actual
10 function or not what we would presume it to mean.

11 The next one, the last one here, is the mobile Safari P
12 list, and this one actually tells us the date here, gives
13 us the time that something was queried, reliably.

14 Q Now, if I could ask you, if you could, just explain to
15 the jury as far as these SQ or SQLite databases, how
16 exactly do they work, and what if any relation do they have
17 with regard to data and information with write ahead log or
18 the WAL file.

19 A So SQLite databases work and function as a storage for
20 anything that the phone may need to reference later that
21 you're doing. They're stored for a variety of things. Most
22 of your third-party apps use SQLite databases and multiple
23 applications do. So SQLite gets information in and it
24 allows for that information to be updated, added to, or
25 removed from. So data that's in that situation, that it's

1 sitting in the database, that is what we refer to as live
2 data. Then data that is waiting to be put into the
3 database, that is sitting in the WAL or has been requested
4 to be removed, that is what's in the write ahead log, and
5 we call that nonlive data because it's not in the active
6 database. So when you're using an application and it's
7 putting that data to that temporary storage area, that WAL,
8 that write ahead log, what happens is, then when you
9 request data by going into your contacts, let's say, and
10 looking at the people who are stored in your contacts,
11 right, your mom, your dad, your brother, your sister, all
12 those people, when you're looking -- your best friend --
13 you're looking up their numbers, that data is all stored in
14 that database. So when you add someone, it does that entry
15 to the WAL.

16 Now, so if I just added Sally, how do I know that
17 Sally's in there, right? Well, what happens is the
18 interpretation of the SQLite database goes to the wall,
19 checks and sees if it's in the WAL, and uses the WAL to
20 incorporate it together to present you everything as if
21 it's in there. Then when you close the application, you
22 close contacts, you don't just put it away, like go switch
23 apps. You actually close it. When it closes, all of those
24 changes get committed. So now the items that you've
25 requested to be deleted, that contact you don't like

1 anymore, that X, whatever their data is no longer in there.
2 The data that you've added is now in there, and now that's
3 all live.

4 Sometimes we can get more complex and recover some of
5 those items that are left over because they are marked for
6 deletion but still sit in the database, or they're sitting
7 on a page that is no longer active in the database. So
8 there's a lot of places that we can recover data from in
9 addition to the WAL that exists in a database after
10 something has happened. But that isn't pertinent to this
11 particular use case.

12 Q Now, as far as that sort of interplay between the
13 SQLite database and the WAL, what if any sort of -- as a
14 forensic examiner, what if any sort of complexity provides?

15 A Oh, one of the biggest complexities is the assumption
16 that because data exists in a write ahead log, that a user
17 took an action to delete it. When I teach at the
18 university, when I peer review my colleagues' reports, this
19 is one of the most common mistakes I see, and it's really
20 because some of the forensics tools to indicate that the
21 file has been recovered, they put a big X on it. And that
22 was actually a big subject of that Standardization of File
23 Recovery paper I referenced earlier, and it speaks about
24 all kinds of files, but actually has a special section on
25 SQLite, specifically because that nuance is often missed by

1 examiners.

2 Q Now, in reference to that being marked as deleted or
3 misinterpreted as deleted by a user, is there a specific
4 tool of the tools that you mentioned before, as far as
5 Cellebrite versus Axiom versus that has that information
6 that others may not.

7 A So Cellebrite and Magnet Axiom - both Cellebrite
8 Physical Analyzer and Magnet Axiom both have file system
9 viewers that then have SQLite database viewers. I would say
10 that those SQLite database viewers have more of a basic
11 function in terms of looking at data in the live database.
12 They don't allow for deep analysis of the write ahead logs
13 which is why in my analysis, I use the specialized
14 Sanderson forensic browser for SQLite.

15 Q And so when you see something like that in a Cellebrite
16 extraction, is there -- what if any further analysis do you
17 do to sort of look behind?

18 A Absolutely. Anytime I see an entry marked as
19 recovered, and I'll use the term recovered instead of
20 deleted, by Cellebrite and the source is the write ahead
21 log, I would go and begin reconstruction of the write ahead
22 logs using Sanderson's forensics tool to get the meat of is
23 this something that has been deleted, or is this something
24 that has yet to be written to the database. You can often
25 see remnants of that based on how many unique entries there

1 are of it, and you -- what the other thing we do is, so I
2 mentioned that when we have the WAL file, it hasn't been
3 applied. So if I take the SQLite database and the WAL file
4 out, and I make another copy of them -- so I've got one
5 copy I'm looking at Sanderson, and I take another copy, and
6 I actually open it, what's cool is it does the commits. So
7 then I have a copy of the database that actually has all
8 those changes. So I now know if the entry was deleted by
9 just comparing the two. So I can do that analysis by
10 basically making the database think it was reopened by
11 reopening it with a nonforensics tool in that instance just
12 to see what it would look like in real life, and then I can
13 look at the difference between the two and determine if
14 something was marked for deletion or addition.

15 Q Now, are there different reasons from your training,
16 your experience, and your knowledge of these systems, is
17 there different reasons for why it's your conclusion that
18 that particular search or those search terms were not
19 deleted by the user, specifically?

20 A Yeah, well, there's a couple of reasons. First, the way
21 tabs work from a functional perspective, you can close a
22 tab, but there's not really a user deletion function for
23 the tab, and there was no evidence of other deletion, if
24 that makes sense. I also -- it doesn't make sense that the
25 term was -- I don't see evidence that the term was searched

1 prior to that 6:24 time. So since the term wasn't searched
2 prior to that 0624 time, the existence of the tab being
3 closed would not mean that that search was deleted because
4 then it would be evident in the other databases pertaining
5 to the actual search not the databases pertaining to the
6 state of the tab. Is there a possibility that the tab was
7 closed? Absolutely. But that is -- that is not a
8 deletion.

9 Secondly, an existence in the WAL file, as we
10 mentioned, could be that it's something new, not something
11 that was deleted. So just it's mere existence in the WAL
12 file doesn't mean it's deleted. I should say that that same
13 X in the tools, you have to check the file because it could
14 be from a free list or a free page in which case - I know
15 we didn't go into those details nuance of SQLite databases
16 that actually doesn't pertain to this. However, those would
17 be truly deleted items. So there's other places where we
18 would expect potential recovery, not necessary in this
19 instance, and you can have something that's in a WAL file
20 and deleted without being in those other locations just
21 stating that its existence in WAL file itself doesn't mean
22 deletion. But there are other SQLite things that would
23 clearly indicate deletions that aren't applicable to this
24 particular search.

25 MR. LALLY: Now, Your Honor, with the Court's

1 permission, if I could ask Ms. Gilman to publish show
2 figure one from Ms. Hyde's report.

3 THE COURT: Okay.

4 THE WITNESS: Ma'am, may I -- thank you, Your Honor.

5 Q And, again, Ms. Hyde, do you recognize what's up on the
6 screen?

7 A Yes, this is figure one. This is a direct screen
8 capture from Sanderson's tool from the browser state DB
9 limited to the "hos long to die in cold" search.

10 Q And if you could using that laser pointer, again,
11 direct the jury's attention to what, if anything, of
12 significance or of note that you observed in using the
13 Sanderson tool that's depicted in figure one.

14 A Absolutely. So all of the searches are the exact same
15 term, and here we have the order index, and here we have
16 that last viewed time. And by looking at the last view
17 time, which is the raw title of that artifact for the time
18 stamp we were looking at, these -- and these are identical.
19 This -- and more importantly, there are actual UID for
20 these are identical which is right here. Now the offsets
21 are different. And what that means is that this is just
22 appearing several times in the write ahead log. It has
23 moved as the database has moved data through the write
24 ahead log to different positions, but has in every instance
25 the same unique identifier meaning that all of these

1 entries are the same entry - just shown multiple times in
2 the same database.

3 Q To that point, as far as the multiple times that it's
4 listed within there, what if any relationship does that
5 have to how many times it was actually searched by a user?

6 A Well, that UID shows that in this particular instance
7 that it existed once in the last time in the tab because
8 this artifact does not tell us how many times something was
9 searched by the user. This artifact is limited just to the
10 tab. We would look at the mobile Safari P list which has
11 one entry service time stamp or knowledge CDB, which also
12 only has one entry for this search. Those is where -- those
13 two locations are where we would determine how many times
14 it had been searched as opposed to this location which
15 could tell us that if there were multiple entries, but
16 there is only one. But since this is laid(ph) -- limited to
17 just the last search that's showing in a tab, it isn't a
18 good source to say how many times was it searched, just not
19 this particular artifact.

20 Q But from other artifacts -- from other artifacts, you
21 were able to determine that?

22 A Absolutely. You can determine that from both mobile
23 Safari P list and knowledge CDB.

24 Q And I'm sorry. I jumped in there. And just bring your
25 attention back to figure one. What if anything else of

1 significance do you note in that in that?

2 A That's really what's of significance is that it is the
3 same entry there multiple times, and we can tell by the U
4 -- unique identifier, that it is the exact same entry also,
5 but -- and it's -- although it's the same search term and
6 the same time stamp, it's only one instance of it, just
7 it's stored in the database multiple times at multiple
8 offsets.

9 Q Now, from the time stamps associated with that depicted
10 in this figure, what, if anything, can you say as to the --
11 or what, if anything, were you able to conclude from your
12 analysis as to the time that the website was viewed?

13 A Well, I guess I should really clearly for people who
14 may not be familiar, that doesn't look like a normal time,
15 right? That's because this is an Apple WebKit time stamp.
16 So we actually convert it to a regular time. So when you
17 look at this number raw, you can actually see that it's
18 consistent throughout, even though you don't know what it
19 is. But if we put it into a decoder, this particular time
20 stamp is where we're getting January 29, 2022 at 0247 a.m.
21 And to be clear, just for real clarity, when we actually
22 translate this time stamp, it's in universal time constant,
23 not in local time. But for the sake of conversation, I'm
24 using the local time here as opposed to the time in the
25 universal time constant, which is how this artifact is

1 particularly stored.

2 Q Now, with your analysis, is there some kind of testing
3 that you conduct or can you explain to the jury sort of
4 what that is and how it how it relates to your analysis
5 here?

6 A Absolutely. So with this artifact and being able to
7 determine what this time stamp really means, I actually did
8 quite a bit of testing, which is fun, but that's okay. So
9 we went ahead and did -- took a jailbroken iPhone, and the
10 purpose of a phone being jailbroken is we're bypassing the
11 security protocol so we can monitor the data and its
12 storage in real time and bring the data through. We did
13 this both -- we did this manually in terms of pulling the
14 data out, and we also did multiple forensic images at
15 different stages. We manipulated tabs. We did some Google
16 searches, and then we would close tabs, move tabs, and
17 perform several different searches that we scripted out
18 first what we were testing, and then check to see how that
19 time stamp was moving. We even did some really interesting
20 things where we tried --

21 MR. YANNETTI: Sorry, objection.

22 THE WITNESS: Yes.

23 MR. YANNETTI: Can we approach sidebar, please.

24 THE COURT: Okay.

25 MR. YANNETTI: Sorry.

1 (Sidebar commences.)

2 MR. YANETTI: I am sorry to interrupt. My objection,
3 Your Honor, is that she is speaking in terms of we did
4 this, we did that.

5 We don't have any report that anybody else worked on
6 this. I have no information about who the "we" is, and I
7 would object to her speaking about somebody else's work
8 because we weren't provided notice of that.

9 THE COURT: What do you say, Mr. Lally?

10 MR. LALLY: Whatever work was done, she's the owner of
11 the firm, so she supervised that work. I don't know that
12 there are any other people involved in it. I can certainly
13 ask that question.

14 MR. YANETTI: I would just like her to speak to her own
15 work. That's all.

16 THE COURT: Go ahead and build a foundation.

17 MR. LALLY: Sure.

18 MR. YANETTI: Thank you.

19 end of sidebar.)

20 Q Ms. Hyde, I'm sorry.

21 A It's okay.

22 Q So you had -- I think when you were talking about some
23 of the testing that you had conducted, you used the term
24 "we".

25 A Oh, I --

1 Q So there are other individuals that worked on this
2 particular assignment?

3 A I had somebody peer review and test my testing. So they
4 didn't -- they didn't work on the case, but as I was
5 testing, one of my team members just validated that I would
6 -- that I was following my test plan. That's just normal
7 practice that we use peer review.

8 Q So the testing that you were testifying about is
9 testing that you --

10 A I conducted, correct, correct. But I had peer review
11 by my team member on the script I had made to do my
12 testing. So and I use the -- when I do testing, I'm
13 following the NIST guidelines for data set generation and
14 testing that's outlined by OSAC, which ironically, I should
15 disclose, I'm a coauthor on.

16 Q And then if you could, I'm sorry, Ms. Hyde, just
17 continue as far as your testing --

18 A Absolutely. Yes, so then populated the device and
19 looked at all of the different data that came back from the
20 different states while it was jailbroken and the changes
21 that happened. What I was saying was interesting is then
22 tied it to a Mac and saw how the browser state changed if
23 we change the browser and the tab on a Mac and how that
24 would affect it, and because we could see the differences.
25 And by we, I mean that my -- I had my testing peer

1 reviewed, because I could see the differences of what the
2 data looked like when I was altering it both in the Mac and
3 on the phone, I was getting differences in those time
4 stamps and those different conditions. So in other words, I
5 could get a time stamp that showed in the browser state DB
6 That was earlier than the current search by a variety of
7 means, including manipulating the tabs, closing them,
8 opening them, switching which one was in proper view
9 forward, as well as looking at that tab on an external
10 device, including a Mac and an iPad on the same account.

11 Q Now, throughout the course of your work, I think you
12 alluded to it earlier in your testimony as far as your
13 experience is concerned, you had occasion to work both as a
14 forensic -- excuse me -- forensic extractions -- forensic
15 investigator, I'm sorry.

16 A Yes.

17 Q As well as working also in research and development; is
18 that correct?

19 A Correct.

20 Q And so from the R and D side, what if any role does
21 that play as far as your analysis in general terms and your
22 analysis here when it came to some of the devices or some
23 of the tools that you were implementing?

24 A I believe that my experience in research, development,
25 and reverse engineering throughout my career pertaining to

1 artifacts, of course, influences and my analysis processes
2 in terms of wanting to ensure I understand how things work.
3 I think it actually gives me a better understanding in many
4 ways of how data moves through devices as well as how
5 understanding why the tools parse and represent data the
6 way they do in terms of the fact that they are using the --
7 they are presenting the data as they parse it using the
8 proper algorithms to dissect that data and determine what
9 it is based on testing and knowledge. So I think it
10 actually influences in a positive way the depth that I go
11 through in my analysis.

12 Q Now, you had mentioned earlier in your testimony that
13 you had reviewed both Trooper Guarino's report as well as
14 an affidavit from Mr. Green; is that correct?

15 A Correct.

16 Q And with regard to the affidavit from Mr. Green, what
17 if any issues, of course, of significance did you observe
18 in his analysis?

19 A In Mr. Green's analysis, there is a conclusion that is
20 drawn that a search occurred at 0247 a.m. on January 29,
21 based on the artifact recovered from browser state DB that
22 Cellebrite parsed out. And there are two errors with that?
23 The assumption that that is the time of the search is a
24 misunderstanding of the browser state DB artifact because
25 that artifact is not the time of search. It's the time of

1 movement at the tab as well as the statement that -- that
2 it was deleted due to the demarcation of Cellebrite as
3 recovered.

4 Q And based on the totality of your analysis or testing
5 and everything that you looked at in this case, what if any
6 conclusions did you come to?

7 A My conclusion is that there was a search at 0247 a.m.
8 for Hockomock Sports, that that browser was in use, and
9 there were continual searches due through the night. The
10 phone was, I do agree with Mr. Green's findings, that the
11 phone was in use at that time at 0227. Later, the phone is
12 a web search is done at 6:23 a.m. for how long. At that
13 moment, Apple produces a suggestion for how long to digest
14 food. The search is instead completed with "how long T-I
15 die and C-K-L-D," at 6:23. A new search is conducted at
16 6:24 of "hos long to die in cold." "Hos long to die in
17 cold?" That search is then the last search that is made in
18 that particular tab, and that's my conclusion.

19 Q What if any conclusion did you come to it in regard to
20 items being deleted pertaining to those artifacts you were
21 looking at?

22 A In regards to those artifacts pertaining to those
23 search terms, I had no evidence of deletion.

24 MR. LALLY: May I have a moment, Your Honor?

25 THE COURT: Yes.

1 MR. LALLY: Your Honor, may we approach?

2 THE COURT: Yes.

3 (Sidebar commences.)

4 MR. LALLY: Your Honor, I'm sorry. I was just going to
5 seek the Court's permission. Initially I was just going to
6 use the tables and the figures as chawks. I think my
7 inclination now would be to attempt to introduce them as
8 exhibits. I don't have printed versions right this second.
9 But I can certainly print them at the break, and I would
10 offer them as exhibits.

11 MR. YANETTI: May I have a moment, Judge?

12 THE COURT: Okay.

13 (Defense counsel confer.)

14 MR. YANETTI: We won't object.

15 THE COURT: All right. **Court Order: Jurors or Juror Issues** We'll
16 take fifteen minutes. How long do you think you'll be on
17 cross?

18 MR. YANETTI: I'm not going to be lengthy. Fifteen
19 minutes or so.

20 THE COURT: Okay.

21 MR. JACKSON: While we are up here, would it be --
22 should I go ahead and call off the doctor for this
23 afternoon?

24 THE COURT: You've got your -- who's your next witness?

25 MR. LALLY: Trooper Paul.

1 THE COURT: Yes.

2 MR. JACKSON: Okay.

3 end of sidebar.)

4 THE COURT: Mr. Lally.

5 MR. LALLY: Yes, Your Honor, the Commonwealth would
6 seek to introduce and admit as the next three exhibits,
7 table one, table two and figure one from Ms. Hyde's report.

8 THE COURT: Okay. There's no objection, Mr. Yanetti.

9 MR. YANNETTI: There is no objection, Your Honor.

10 (Whereupon Exhibit No. 580, Table 1 - Web History Tool

11 Results Combined, was marked as an exhibit.)

12 (Whereupon Exhibit No. 581, Figure 1 - Instances of Google

13 Search, was marked as an exhibit.)

14 MR. LALLY: Just table one, table two. I think the
15 order I gave them. Thank you.

16 And thank you, Your Honor. And thank you very much,
17 ma'am. I have no further questions, Your Honor.

18 THE COURT: All right. Mr. Yannetti.

19 MR. YANNETTI: Thank you very much, Your Honor.

20 **CROSS-EXAMINATION**

21 **BY MR. YANNETTI:**

22 Q Good afternoon, Ms. Hyde.

23 A Good afternoon, sir.

24 Q Ms. Hyde, you just spent maybe 45 minutes to an hour,
25 whatever the time period was, explaining to these jurors,

1 what is really a complex set of facts that led you to
2 conclude that the 2:27 a.m. timestamp on that Google search
3 was triggered by the closing of a tab. Did I essentially
4 sum that up correctly?

5 A Essentially, except it's not 2:27 a.m. timestamp on a
6 Google search. It's a 2:27 a.m. timestamp on a tab.

7 Q Fair enough. Thank you.

8 And in the context, or in the course of your
9 explanation, you discuss WAL files?

10 A That is correct.

11 Q SQ like database?

12 A Yes.

13 Q PLIS database?

14 A Yes.

15 Q Knowledge C database.

16 A Yeah, PLIS is not a database. Just it's a structure. So
17 just a small correction.

18 Q Thank you for the correction. Opening tabs and closing
19 tabs, correct?

20 A Yes.

21 Q And other issues related to your analysis of the phone
22 extraction, correct?

23 A Would you call them issues as that were --

24 Q Well, maybe that's a bad word to use. Other elements.

25 A Elements, fair. Fair enough, yes. Yes.

1 Q I'm really not trying to trick you. I know I wouldn't
2 be able to.

3 Would you agree with me that another simple explanation
4 for that 2:27 a.m. timestamp was that the user of that
5 iPhone, conducted that search at or before 2:27 a.m.?

6 A Can you rephrase, please?

7 Q I'm going to phrase it the same way and hope I don't --

8 A Repeat it. Repeat it, please.

9 Q Sure. Thank you. Would you agree with me that another
10 simple explanation for that 2:27 a.m. timestamp, was that
11 the user of that iPhone conducted that search at or before
12 2:27 a.m. on January 29th of 2022?

13 A That timestamp is not indicative of a time of search.
14 So the question is difficult to answer, because I can't say
15 that that timestamp tells me anything about the time of
16 search.

17 Q So you're -- as I take your answer --

18 A Mm-hmm.

19 Q -- you're not denying that the timestamp, and whatever
20 you get from that timestamp, doesn't rule out that the
21 Google search was done at or before 2:27 a.m., correct?

22 A If I'm understanding your question, there was a double
23 negative so I just want to clarify. The question is if the
24 timestamp could exist because of a search happening at that
25 time?

1 Q No.

2 A Okay.

3 Q What I'm saying is your analysis of the phone does not
4 rule out that the user of that phone performed that Google
5 search at or before 2:27 a.m.?

6 A There is no indication of a Google search at or before
7 2:27 a.m.

8 Q But again, I'm getting to whether you can rule that
9 out, ma'am. That's really the crux of my question. Can you
10 rule out that the user of that phone conducted that search
11 at or before 2:27 a.m. on January 29?

12 A There is a very unlikely possibility based on the fact
13 that there is no evidence that the search occurred before
14 that time. That's just like saying that the user searched
15 for pandas at 2:27 a.m., could you rule that out? I can't
16 rule out something that doesn't exist.

17 Q All right. Well, you would agree with me that with
18 regard to your analysis, this phone extraction --

19 A Mm-hmm.

20 Q -- you were given very specific instructions in terms
21 of what to look at, correct?

22 A Correct. I had a very limited scope in this analysis.

23 Q And who was it that gave you that limited scope?

24 A That scope was relayed to me by Detective Tully.

25 Q Okay. And Detective Tully instructed you specifically

1 to only look at the part of the phone extraction that dealt
2 with the Safari search history?

3 A Safari's history, search history, specific to January
4 29, 2022, that is correct.

5 Q And he instructed you not to look at anything else on
6 the phone, correct?

7 A I looked at related artifacts such as the -- such as
8 what was being done at that time, the phone being on, the
9 phone being used, but not anything else outside of that,
10 correct.

11 Q And you were not instructed, for instance, to look at
12 other user activity on the phone including examining call
13 logs on the phone, correct?

14 A Correct.

15 Q And you would agree with me that if you were allowed or
16 instructed to examine the call logs, that could reveal
17 deletion of calls that morning, correct?

18 A Of course.

19 MR. LALLY: Objection.

20 THE COURT: Okay. The objection is sustained.

21 MR. YANNETTI: Thank you, ma'am.

22 THE COURT: Any follow-up, Mr. Lally.

23 MR. LALLY: No, Your Honor. No redirect.

24 THE COURT: Ms. Hyde, you are all set.

25 THE WITNESS: Thank you very much.

1 (End of requested testimony.)
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C E R T I F I C A T I O N

I, CHRISTINE D. BLANKENSHIP, NOTARY PUBLIC, DO HEREBY CERTIFY THAT THE FOREGOING IS A TRUE AND ACCURATE TRANSCRIPT FROM THE RECORD OF THE COURT PROCEEDINGS IN THE ABOVE-ENTITLED MATTER.

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